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ORIGINAL ARTICLES.

XEROSIS OF THE CONJUNCTIVA WITH REPORT OF A CASE.*

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Systematic writers recognize two forms of xerosis of the conjunctiva: First, the parenchymatous, and second, the epithelial form.

The essential characteristic of both forms is dryness. The mucous membrane at the xerotic spots is lustreless, presents a shrunken appearance, and the tears flow over these spots without moistening them. There is usually a more or less anæsthetic condition of the conjunctiva and the cornea.

The parenchymatous form is the result of cicatricial contraction of the deep as well as the superficial layers of the conjunctiva, converting this membrane, wholly or in part, into scar tissue. It is caused by local diseases, such as trachoma and, less frequently diphtheria, burns, ectropion, lagophthalmus, etc., and involves the palpebral as well as the ocular conjunctiva. In severe cases the sulcus is obliterated, the lids become attached to the eyeball and the cornea becomes opaque.

This type is incurable. The treatment is palliative consisting of the instillation of glycerine and water, liquid vaseline, emulsion of codliver oil, etc.

*Read at the March meeting of the Ophthalmic Section of the St. Louis Medical Society.

Epithelial xerosis occurs in a severe and in a mild form. The severe form occurs in marasmic children associated with keratomalacia. In these cases the mucous membrane becomes so shrunken that the retrotarsal folds become obliterated, the lacrimal secretion is stopped entirely, the cornea becomes opaque and frequently sloughs.

The mild type is always found in the so-called inter-palpebral zone and may or may not be bilateral. It is especially prone to affect the temporal side of the ocular conjunctiva, probably due to the fact that this side is more exposed to light, wind and dust. It takes the form of greasy, slightly raised, dry looking patches, to which the tears do not adhere, and which are usually triangular in shape with the base toward the cornea. The cornea is sometimes involved, even at the beginning, and sometimes it escapes. This type usually occurs as the result of defective nutrition and lowered vitality brought about by disease, scarcity of food or by dazzling of the eyes by the sun, snow, electric light or the glow of a furnace. Lowered nutrition seems to be the most important factor. It occurs at times as an epidemic, associated with night blindness, among people of poor nutrition as the result of prolonged fasts, years of famine, or among soldiers whose eyes have been exposed to the sunlight, especially when reflected from snow. On account of the constant presence of the xerosis bacillus in this disease it was at one time thought to be a causative factor. At present the consensus of opinion seems to be that it is innocuous in the eye and that its presence in these cases can be accounted for by the fact that it finds in the dying epithelium a suitable soil for its growth. Night blindness may or may not be a complication.

Epithelial xerosis not associated with night blindness is generally supposed to give rise to no symptoms other than the appearance of the conjunctiva. With this opinion Sydney Stephenson (Trans. Soc. of U. K., 1898) does not agree. He made a careful study of a series of cases and found constant changes in the visual field, when taken in ordinary day light with a circular test object 10 mm. in diameter. In every case the fields for red and green were concentrically contracted; the field for red shrinking more than that for green. He frequently found the fields for the two colors transposed. An inconstant change was a constriction of the field for white, more marked on the temporal side and ranging from 5 to 10 degrees. The changes in the visual fields seemed to be the same in simple xerosis as in those

cases associated with night blindness. With the disappearance of the xerosis the fields resume their normal size and relations.

As to the ophthalmoscopic findings Stephenson is convinced that in xerosis with or without night blindness the retinal reflexes are exaggerated and that frequently a semi-circular jagged reflex is seen close to the nasal side of the optic disc. This is best observed under a weak illumination and through an undilated pupil. Judging from the state of the fundus and the fields of vision he feels justified in assuming that any eye suffering from epithelial xerosis is in a state of incipient night blindness.

A close study of his cases revealed to Stephenson two important facts: First, that a majority showed signs of past or present scrofula or tuberculosis. Second, an examination of the blood showed a marked deficiency of hæmoglobin in every instance, the average being 65 per cent of normal as compared with an average of 76.62 per cent of normal in children not suffering from this disease. With the disappearance of the xerosis the hæmoglobin increased, but never to normal. While epithelial xerosis usually occurs as the result of malnutrition or exposure to bright light, it sometimes occurs in people who are in every other respect apparently in good health. B. Agricola (*Klinische Monatsblätter für Augenheilkunde,* 1905) reports two such cases.

His first was a child eight years old whose parents reported that he was perfectly healthy when born with the exception of a white spot on the right eye at the sclero-corneal margin on the temporal side. This had not increased in size but they desired to have it removed. Agricola found it to be about 1 cm. in diameter and involving a small portion of the cornea. Its surface was rough and was covered with a foam-like substance, which the tears did not moisten. The child had no night blindness and appeared to be in perfect health. The growth was removed and in a week's time the eye was quite normal.

His second case was a man 18 years of age, well nourished and apparently in perfect health. At his birth his parents noticed a white spot at the temporal sclero-corneal margin of the left eye which had not increased in size. In form and size it had the appearance of a pinguecula but its surface was rough and the tears did not moisten it. There was no night blindness. The growth was removed with good results.

The following case seems to belong to this class, although not congenital. On June 8th, 1907, Mr. P., aged 43, consulted me regarding a growth on his left eye which he had first noticed

three months before the date of his visit. It gave him no discomfort in any way. He had never had a severe illness, had not been exposed to a bright light, had no night blindness, felt well, and seemed to be in perfect physical condition. Examination revealed a round, sharply defined, slightly elevated, greasy-looking growth, about 4 mm. in diameter, situated at the sclero-corneal margin on the temporal side, and involving the cornea to the extent of about 1½ mm. No anæsthesia of the cornea or of the conjunctiva; the lacrimal secretion was normal, but did not moisten the surface of the growth. The spot was curetted and the debris was removed quite easily, leaving a depression with sharply defined edges. The ulcer was very superficial, seeming to involve only the epithelium of the cornea and of the conjunctiva. Tears moistened it quite readily. At the end of 48 hours it had assumed its original appearance. Some of the scrapings were examined by Drs. Alt and Tiedemann, who both reported finding quantities of xerosis bacilli and some staphylococci.

As to the ætiology in this case as well as the cases reported by Agricola, I am completely in the dark. The growth was thoroughly cauterized with thermocautery, and in ten days' time nothing but a slight scar remained.

As to the pathological anatomy of this form of xerosis Parsons (Histology of the eye) says: "In all cases the principal anatomical changes are found in the epithelium, which becomes thickened and epidermoid, at the same time undergoing fatty degeneration. The superficial cells are flattened, and their nuclei have disappeared; the deeper layers consist of prickle cells, often widely separated by spaces in which leucocytes are found; the nuclei of these cells stain well, and are surrounded by a clear zone, outside of which there are numerous fat globules; these, however, are much more numerous in the flattened cells. Much of the fat is due to the secretion of the Meibomian glands, which is increased. If the fat is removed by soap, the cells become capable of being wetted by the tears."

M. S. Mayou (Trans. of the Oph. Soc. U. K., '04) made a clinical and microscopical study of six cases. He thinks that the essential change in the production of these plaques is the keratinization of the epithelium, due partly to exposure and drying of the epithelium and partly to deficient lacrimal secretion occurring in children of delicate health, and that the Meibomian secretions with the xerosis bacilli simply adhere to these plaques.

Agricola's microscopical examination revealed, in both his cases, a thickening of the epithelium and a horny change of the

surface cells so that the epithelium had taken on cutaneous characteristics. He thinks the cases described by Lester and Hancock under the name of "epithelial plaques," and by Gallenga and others as "tyloma conjunctivæ" are variations of the same condition and should be classed under the one title of xerosis.

The prognosis in the severe form is, of course, extremely bad. In the mild form, it is good. Serious consequences to the eye or to the body in general never occur. It is, however, apt to recur. According to Stephenson its tendency is to spontaneous cure.

Treatment in the cases caused by malnutrition consists of proper food, good hygienic surroundings, and the administration of tonics, preferably some form of iron. In cases occurring in persons in good health, the removal of the plaques by the knife or the thermocautery, seems the most satisfactory.

POTASSIUM IODID IN TREATMENT OF INCIPIENT CATARACT.

Von Pflugk (*Medizinische Klinik,* Berlin, Feb. 16,) reports results from subconjunctival injection of a 1 per cent solution of potassium iodid, containing 2 per cent sodium chlorid. in the earlier stages of cataract. Experimental research has also confirmed the benefits of this treatment and explained its mechanism. Since Badal's first recommendation of potassium iodid for this purpose, in 1901, 239 cases have been published, including von Pflugk's own experience with 55, and Verderau's with 48. Improvement was marked in all but 14 and 6 patients, respectively, and the cataract did not progress in any instance. Badal and his followers merely instill and bathe the eye with .025 and 2.5 per cent solutions and the results are not so good as with the subconjunctival injection. It is well to commence with their technic, however, and resort to the injections if improvement does not become evident under the instillations. The potassium iodid technic is regarded by von Pflugk as one of the most important achievements of the last few years, and he urges its general adoption and perfection of the technic. Capsular and nuclear cataract are not benefited to any extent, the potassium iodid having its main effect on ordinary subcapsular cortical cataract. —*Jour. A. M. A.*

ON NEW RESULTS IN THE STUDY OF SYMPATHETC OPHTHALMIA.*

By Dr. G. Lenz,

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Translated by Adolf Alt, M.D.

Sympathetic ophthalmia is not only in practice an extraordinarily important disease, but is so full of theoretical problems, some of which concern other parts, that it should prove of general interest to discuss the scientific questions which at this time are agitating us.

Sympathetic ophthalmia is—or rather was—more especially a clinical entity. Following an opening in the walls of the eyeball mostly through a trauma, but also through other processes, for instance a perforating serpiginous ulcer, an iridocyclitis makes its appearance which mostly runs a slow and protracted, occasionally a very rapid course, and generally in from six to eight weeks, but also after years and decades, and at the earliest twelve days later, inflammatory symptoms appear in the fellow eye. The clinical picture of these symptoms usually resembles very much the symptoms in the eye first affected and there is no cause to be found, except the injury to this eye.

A post-traumatic iridocyclitis is a pretty frequent affection, but we know that only a relatively small number of such cases are followed by sympathetic ophthalmia. Naturally, therefore, it is of the greatest importance to know, if there are in the eye first affected characteristic clinical or even only anatomical signs which permit us to decide whether this eye is capable of arousing a sympathetic inflammation or not. The latter signs we will discuss here.

While at some previous time Schirmer upheld a specific anatomical picture in sympathetic ophthalmia, Ruge in 1903, based on a large anatomical material, denied this in a decided manner. According to his statement distinguishing symptoms between a simple traumatic and a sympathizing uveitis are wanting. They differ in a grade only in the severity of the inflammatory symptoms. Thus this question appeared unsolved when, in 1905, Fuchs published a larger paper on sympathizing inflammation.

*Berliner Klin. Wochenschr., April 27th, 1908.

Fuchs went at the examination of this subject in a peculiar manner. From his large anatomical material he selected, without knowing their histories, all the eyeballs which had been enucleated on account of alterations which eventually might have been capable of causing sympathetic inflammation, viz.: injuries, operations followed by inflammation, corneal ulcers with perforation and consequent iridocylitis. Of 200 eyeballs he thus selected 29 which showed an anatomical picture in common which he thought to be characteristic of a sympathizing inflammation. Then looking up the histories of these eyes he found that in these 29 cases a sympathetic inflammation had actually existed in the fellow eye, and only in these 29 cases. This was an unassailable proof that it is really possible to decide from the pathological anatomical condition whether or not an eye is capable of exciting sympathetic inflammation. Kitamura, who repeated such an examination on a larger scale at the Breslau eye clinic, was in a position to affirm Fuchs' statements in toto.

Now, which are these characteristic signs of a sympathizing inflammation? The most important sign is the infiltration of the uveal tract which produces an enormous thickening, especially of the choroid, which may be several times the normal thickness and in pronounced cases may show a tendency to break outward through the sclera. It has, of course, been known for a long time that the infiltration of the uvea is a constant symptom, especially since Schirmer's examinations. However, we find in sympathizing eyes furthermore with extraordinary frequency an exudation on the surface of the membranes lining the interior of the eyeball, rarely of a purely purulent, more often of a fibrinoplastic character. Do these, too, belong to the picture of the sympathizing inflammation?

Fuchs' careful examinations have shown that this is not the case. When we find infiltration and exudation together in an eye, he assumes a mixed infection. The exudative processes are usually due to well known microbes; they appear more acutely and recede very much quicker than the sympathetic process which is produced by specific microbes, as yet unknown. These have a much longer period of incubation and thus we usually find the one process, which Fuchs terms an endophthalmitis septica, already receding while the sympathetic infiltration is still increasing. Only in the last stages of specially severe cases it may happen that the infiltration produces an exudation, as pictures in sympathizing eyes which are not disturbed by any mixed infec-

tion have shown. This is due, probably, to the fact that the infiltration sends materials into the interior of the eyeball which excite an inflammation, which in turn causes an exudation from the membranes lining the interior of the eyeball. In a general way we may now maintain that the only characteristic part in the picture of sympathetic ophthalmia is the infiltration of the uveal tract. This infiltration shows differences as to the parts of the uvea in which it is situated and, also, as to the cell forms which compose it.

In the anterior part of the uveal tract, especially the iris and ciliary body, according to Fuchs, we find the earliest and later on the densest infiltration in the innermost layers, those facing the interior of the eye. In the iris this infiltration is usually the least dense, the ciliary body is generally much more infiltrated, as is also the choroid, often even in the most prominent manner. It is characteristic that the inflammation is at its highest in the posterior parts of the eyeball, while the parts near the ora serrata are relatively less affected, and that, as Bailey stated previously, the infiltration at first takes place in the layer of the large bloodvessels. The capillaries are destroyed later when the infiltration has progressed much further.

The infiltration is made up of different cell forms. Most frequent appear small lymphocytes with a large round, sometimes, when they are arranged in rows, with a somewhat oval nucleus and a thin almost invisible protoplasma body. Furthermore we find polymorphonuclear leukocytes which usually show eosinophile granulations with varying frequency, sometimes they make up half of the infiltrating cells. When the infiltrations are somewhat older, we see even with a low power in most cases in the center of the foci groups of so-called epithelioid cells which appear as lighter spots. They are considerably larger than the leucocytes, their oval nucleus takes up but little stain; when the cells, as is usual, lie closely together their cell outlines are not sharply marked, so that it appears as if there was a single large cell with many nuclei. According to Fuchs the epithelioid cells take their origin from the normal cells of the uveal stroma, partly also from bloodvessel cells, ordinary connective tissue cells and retinal pigment cells. Mastcells and giant cells, the latter often of the Langerhans type, appear much rarer and are not always found. In old infiltration, finally, we find cells of varying shapes which probably must be looked upon as stages of further development of the small lymphocytes. They grow in size, assume a more or

less large protoplasmic body, sometimes with pseudopodia-like offshoots, in which frequently a lighter colored part can be found close to the nucleus. The chromatine forms granules at the margin of the nuclear membrane, so that the nucleus looks as if supplied with spokes.

In the general pathology of Maximow all of these cells are called polyblasts; Ziegler calls them polymorphous lymphocytes. I should not speak at such length of these cells, if they were not of especial importance concerning the question of the origin of the lymphocytes of which the infiltration consists. Two opinions are held regarding this question. While some authors assume that the cells forming the small cell infiltration are emigrated lymphocytes of the blood, Marchand and his pupils deny them the faculty of wandering. They see the origin of the small cell infiltration in the normal cells accompanying the adventitia of the bloodvessels and which they call leukocytoid cells.

According to the newest researches this opinion can no longer be held. The emigration of lymphocytes from the bloodvessls has been directly observed in the living and in the fixed specimen. A further proof is that, since the adventitia cells are large organisms, if they were transformed into small lymphocytes, transition forms like the polymorphous lymphocytes described above would necessarily result, and these without a doubt are connected with lymphocytes. According to K. Ziegler and Zieler, however, this is not the case in the early stages when observation is especially easy. Only in the later stages Ziegler found processes of cell division in the adventitia cells and groups of polyblast-like cells in the immediate neighborhood. From this I conclude with these authors that in the beginning the small cell infiltration is formed solely by emigrated blood lymphocytes and that later only the adventitia cells take part in this process.

As regards sympathetic infiltration this question was first opened by Fuchs, although he did not reach a definite result. On the whole, however, he leans toward Marchand's opinion. By a fortunate accident I became possessed of a sympathizing and the sympathized fellow eye, in which latter the infiltration was at such an extraordinarily early stage as thus far—only 10 sympathized eyes have been anatomically described—has not yet been observed. Here the most favorable occasion was offered to study the question as no accidental processes did as yet disturb the image. The result is that I can fully confirm the experiences in general pathology as regards the absence of polymorphous

lymphocytes in the beginning and their appearance at later stages, for the sympathetic inflammation. In a particular beautiful manner I could see the different stages of emigration; how the lymphocytes at first placed themselves against the walls of the bloodvessels, then appeared within the walls, and finally in growing numbers lay outside of the bloodvessels. In this way I believe my findings to be further proof of the correctness of the general opinions above described.

All of this applies as much to the sympathizing as to the sympathetic inflammation, so that I can fully confirm Schirmer's statement concerning the identity of the inflammation even regarding the finer morphology and the origin of the infiltration.

We may shortly sum up the more recent anatomical results in the field of sympathetic ophthalmia in the following sentences:

(1.) There is a specific anatomical picture which allows of differentiating it from other forms of chronic uveitis.

(2.) Only such eyes which show this specific picture, can cause sympathetic ophthalmia.

(3.) The specific infiltration in the eye first diseased is absolutely identical with the one in the eye secondly affected, even as regards its origin.

I think, these anatomical results are of special importance with regard to the still unsolved question of the ætiology of sympathetic ophthalmia, and the manner of transmission of the disease process from one eye to the other. The anatomic pictures as detailed above resemble very closely to changes which we find in infectious diseases, especially in lues and tuberculosis, and this fact makes it very probable that in sympathetic ophthalmia, too, we have to deal with an infectious agent, a living microorganism, and furthermore, from the specific quality of the anatomic picture which is distinct in spite of its similarity to that of other infectious processes, we must draw the logical conclusion that in this disease there must exist a microorganism sui generis with specific characteristics. This is the case with tuberculosis with which several authors have brought sympathetic ophthalmia into connection, a hypothesis, the falsity of which Axenfeld has convincingly demonstrated. Finally, the absolute identity of the anatomical picture in the first and secondly affected eye does not allow of any other explanation than that the same specific microorganism must attack both eyes. We must insist on this on account of Schmidt-Rimpler's modified ciliary nerve theory which will be detailed further on.

Now as to the manner of transmission, there was a time when the pathogenesis of sympathetic ophthalmia seemed absolutely clear in all points; this was in the 80's of the past century, the time of the Leber-Deutschmann transmigration theory which assumed that the incitors of the inflammation migrate along the first optic nerve to the chiasm and from thence downward along the second optic nerve into the secondly affected eye. Deutschmann thought that staphylococci produced the disease.

From all that is known today the staphylococci never produce such anatomical changes as we have described them above as characteristic of this disease. Based on the anatomical findings alone they must be excluded, aside from the fact that later observers have not been able to find them.

But, even aside from the staphylococci the migration theory could not withstand the later researches. Neither in the animal experiment could migration of any form of micro-organism be found, nor did the anatomical conditions in human eyeballs speak for this theory in any way. On the contrary, all of the more recent observers agree that the inflammatory changes of both eyes reach only for a very short distance into the optic nerve behind the eyeball, while the optic nerve farther back and the chiasm are free from such changes. The constant absence of any meningitic symptoms speaks against it from a clinical standpoint. Thus this at first so brilliant theory could not hold and was soon replaced by another one which is still somewhat in vogue and which I, therefore, have to discuss more intricately. I mean Schmidt-Rimpler's modified ciliary nerve theory.

There is no doubt that a certain irritation can be transmitted from one eye to the other by way of the ciliary nerves. But Schmidt-Rimpler assumes that this transmitted irritation produces certain disturbances in the circulation and nutrition of the secondly affected eye, which render it capable of receiving any micro-organisms which accidentally circulate in the blood, which need not come from the first affected injured eye, but may come from any infectious focus anywhere in the body. The excitor of the sympathetic inflammation, therefore, need not be the same micro-organism as the one which produced the sympathizing inflammation in the first eye. According to my opinion, these statements from the anatomical pictures alone must be considered as fallacious. The anatomical conditions demand one and the same micro-organism as the cause of the identical form of inflammation in both eyes. Schmidt-Rimpler's theory does not take this into account.

But in other points, too, this theory does not agree any longer with our modern knowledge. We now know a relatively large number of cases in which quite late after the enucleation sympathetic inflammation developed. If the continued state of irritation in the second eye by transmission from the first affected eye was the only possible cause of an infection, the removal of the source of irritation would quickly exclude such a possibility, and this is contradicted by clinical experience.

The theory was based on experiments made by Moll, who stated that, having injected pyocyaneus cultures into a vein, he found metastases in the one eye when he produced a state of irritation in the other one. But, with Roemer, I believe that all such experiments in which a severe general infection of the animal experimented on cannot be prevented, cannot be looked upon as convincing. Necessarily there must appear changes in the whole vascular system and that is not the case in sympathetic ophthalmia in which the patient does not show any visible general disturbances. Thus, too, the repetition of similar experiments with weakened incitors has shown such variations of results that no convincing conclusions can be drawn from them.

In my opinion the ciliary nerve theory loses all its ground by the proof that no important changes in the bloodvessel walls, enabling micro-organisms to pass through them, can be transmitted from one eye to the other by means of the ciliary nerves. Only very recently Roemer has produced proof for this with the aid of biological methods. If blood from cattle is injected into the abdominal cavity of rabbits, very soon certain protective bodies, the hæmolysins, are formed in the serum of these animals which even in minimal quantities can dissolve the cattle blood corpuscles. At first these hæmolysins are not found in the aqueous humor of the eye. As soon, however, as even a feeble irritation is set up in the eye, for instance by means of a subconjunctival injection of salt solution, the hæmolysins appears at once in the aqueous humor. This proves the enormous sensibility of the vascular system of the eye to even minimal irritations. In the other, the not irritated eye, the hæmolysins are never observed, the irritation of the first eye may be as strong as possible, even if a severe infectious process is set up in it. Thus far we have no finer reagent and, I think, that from all these arguments we can no longer doubt the incorrectness of the ciliary nerve theory.

According to our present knowledge then both the migration and the ciliary nerve theory are untenable. Thus it is quite nat-

ural to consider the third possible manner of transmission, that is by the way of the blood, and this theory, previously announced by Berlin, is now again gaining more and more ground, especially through the labors of Roemer, whose exposé I shall follow in the main in the following description:

A priori it was argued against the metastatic theory in a general way that when germs circulate in the blood necessarily a general affection would have to result, which, as we know, does not happen with sympathetic ophthalmia. This argument, however, due to our present bacteriologic knowledge, can no longer be upheld. The circulation of migro-organisms in the blood does not by any means always mean a general pyæmia. Moreover, we must demand of the questionable micro-organism of sympathetic ophthalmia that it has specific pathogenous peculiarities only for one organ, namely, the eye, and is indifferent as regards the remainder of the body. It is well known that there are specific micro-organisms for other organs, as for instance the tetanus bacillus for the nervous system. Why should there not exist certain such specific organisms for the eye? We even know some which fulfill these demands to a certain degree and which produce chronic inflammatory conditions in the eye, yet, when they have entered the circulation show not the slightest pathogenous characteristics. These are certain forms of saprophytes, especially the hay bacillus.

As regards the way of transmission, Roemer has succeeded after an injection of an infusion of spores of the hay bacillus into one eye, in finding them in the iris of the fellow eye and in growing them. Of course, they can have gotten there only by way of the blood. If we further assume that the incitors of sympathetic ophthalmia can, moreover, assume latent forms, we can easily understand, how even some time after the removal of the original focus metastases may be formed. Wyssokowitsch has shown that latent forms of saprophytes may remain capable of life in the capillaries of the large glandular organs for 78 days.

However, all this is the result partly of theoretical speculation and partly of animal experiments. The most important question now is: how do the findings in man compare with it? In this field up to date we unfortunately possess but an extraordinarily small material of sympathetically affected eyes, which, moreover, on account of their progressed stages were little apt to help in the decision of such questions. I think, therefore, that what I found in a sympathized eye at the earliest stages is perhaps apt in a degree to help in the solving of the questions at issue.

Fuchs has previously stated that in sympathizing eyes when the infiltration increases groups of cells which are probably carrying the specific incitor break through into the venous vessels and thus must enter the general circulation. I, too, have been able to see thus in a typical manner. I found, furthermore, in the sympathized eye numerous obstructions of retinal arteries in the otherwise intact retina, which, since no other explanation could be found, must probably be looked upon as of embolic origin. Of course, the whole long obliterating tissue cannot represent the embolus, we can only assume a capillary embolism which through apposition has gradually led to the obliteration of the whole bloodvessel. Then the neighboring veins have, also partly become obstructed. If this was really an embolic obstruction we must still prove that the embolus came from the injured eye and this can only be done by means of charactertistics which stamp it as specific, that means, the finding of the specific microorganism. To-day this is still impossible. Finally it might be cast up to us that the real seat of the sympathetic ophthalmia is the uveal tract, while in our case the retinal bloodvessels were affected. Yet, on account of the complicated vascular system of the choroidea it is especially difficult to find embolic processes in it. And, since in this case, as an exception, the retinal bloodvessels were affected, also, and since this eye was anatomically examined at such an early stage, this might be looked upon as an especially fortunate accident.

Although, then, the chain of proof has still some gaps, especially since we do not as yet know the incitor of sympathetic ophthalmia, I believe that from all that we know to-day, the theory of specific metastases rests on by far the best foundation when compared with all other hypotheses.

If, in closing, we once more look over the results of the researches during the lest few years, we may well say that we have made decided progress in the clearing up of sympathetic ophthalmia. Yet, at present, this progress lies only in the scientific-theoretical side of the question, as regards the clinical-practical diagnosis we are to-day as yet frequently enough in doubt whether an injured eye is capable of causing sympathetic ophthalmia or not. And as long as we are lacking in such definite criteria, we still are in duty bound to remove every eye that appears in the least suspicious, in order to save the fellow eye.

MEDICAL SOCIETIES.

OPHTHALMIC SECTION

OF THE

ST. LOUIS MEDICAL SOCIETY.

Meeting of March 11, 1908.

DR. A. E. EWING in the Chair.

Dr. J. F. Shoemaker presented a case of negroid choroid in the right eye of an American child, the left eye being the normal eye of a person of light complexion. The iris of the right eye was also much darker than that of the left eye and there were numerous dark colored spots in the sclera.

DISCUSSION.

Dr. John Green, Jr., thought that this might indicate some remnant of negro blood of remote ancestry. It would be very interesting to have the patient examined with that point in view.

A Case of Siderosis of the Right Eye, caused by a piece of iron scale which the X-ray failed to locate (Presentation of Patient).—By Henry Muetze, M.D.

In the morning of September 24, 1904, the patient, a cabinet maker, now 49 years old, while cutting off a bolt, was struck in the right eye by a piece of iron-scale. He kept on working and when he presented himself in the afternoon for treatment, the condition of the right eye was as follows: Shallow cut in the outer part of margin of lower lid; a small perforating wound in inferior, exterior quadrant of cornea; irido-dialysis, and upon dilatation of the pupil, a small dark opacity in outer lower quadrant of lens was observed. Other media clear, fundus normal, vision 20/20. The patient had no conception of size of piece of iron-scale which struck him and two X-ray examinations proved negative. It was then assumed that a larger piece had struck the eye-ball and dropped off, and that what at first appeared to

be a foreign body in the lens was nothing more than partial traumatic cataract. After appropriate treatment, patient was discharged three weeks after the injury with normal vision. About four months later, he presented himself again, for reading glasses, and the condition of the right eye was the same. About a year after the injury the entire lens had become cataractous and the iris, naturally gray, had assumed a brown color; it was rust-stained. From now until October 19, 1907, when successful extraction with iridectomy was performed, the patient had several attacks of irido-cyclitis, which were easily controlled by the usual remedies. The heavily rust-stained lens was examined carefully but no foreign body was found. It was undoubtedly absorbed and deposited again as hydroxide, causing the uveitis from which the eye is still suffering at present. The eye is perfectly quiet; vision is still improving, and with plus 11.00 D. S. is 1/10. The failure of the X-ray to reveal the piece of iron-scale is explained by the fact that in its shortest diameter, it must have been too thin to offer sufficient resistance to the ray and the picture through the longer diameter was easily obliterated by diffusion of rays from the cranial bones. In a similar case, the giant magnet should be called to aid, besides the X-ray.

DISCUSSION.

Dr. M. H. Post asked if the Doctor had tried the sideroscope. They had had excellent results from the use of it under the management of Dr. Ewing.

Dr. Muetze said he had not. The experience of this case had taught him not to depend entirely upon the X-ray. Iron-scales offered very little resistance to the X-ray and in this case the piece must have been very small indeed. There were numerous large and small opacities in the vitreous. The iris now looked rusty and brown and the oxide had set up a uveitis with all its consequences.

Dr. Jennings suggested that since the picture had been taken, 4 years ago, a great improvement has been made in the technique of radiography and perhaps now a similar case would be shown in the plate.

Primary Epibulbar Melaon-Sarcoma.—By Julius Gross, M.D.

(See April number of this journal.)

DISCUSSION.

Dr. Adolf Alt had seen several of these cases and had seen one unpigmented sarcoma. That was about twenty years ago.

The patient had a tumor at the corneo-scleral margin. He had removed it and in a few weeks it returned and he had again removed it. After three months it returned and the eye was removed. This man had, within the last year, been operated upon for a papilloma of the trachea. Of course, this papilloma of the trachea had nothing to do with the sarcoma. The peculiar cells found in these tumors make it sometimes quite difficult to determine whether they are epitheliomatous or sarcomatous.

Melanoma of Iris (Presentation of Patient).—Dr. F. E. Woodruff.

Miss E. S., age twenty-two, presented herself for treatment, with the following history: About two years ago she noticed a black streak at the inner lower quadrant of the right eye, in the anterior chamber, the growth extending from pupillary margin to the circumference of the iris. She noticed no change in this black streak for some two years, but in the last three months it has increased considerably in size until it now occupies the inner lower fourth of the anterior chamber. There has been at no time any pain nor any ciliary injection so far as I could learn; no symptom of neoplasms in other parts of the body. The presence of this melanoma may indicate either a benign or a malignant condition, but simple melanomata are frequently only the precursors of malignant condition. The rapid growth during the last three months would point to malignancy. The growth seems to be a proliferation of the pigment stroma. Without microscopical examination it is impossible to make a positive diagnosis. This the patient refuses to have done. The condition, however, I believe to be one of malignancy and the ultimate outcome will be an enucleation.

DISCUSSION.

Dr. Adolf Alt thought it was a primary melanosarcoma of the iris. These tumors grow very slowly. As to whether the eye should be at once removed, he suggested that an iridectomy be done and the specimen submitted to examination. In a number of cases such a sarcoma had been removed by an iridectomy with no return of the condition. It would be worth while to make the attempt, at least.

LLEWELLYN WILLIAMSON, M.D.,

Section Editor.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Meeting of Thursday, January 30th, 1908.

CARD SPECIMENS.

Sections from a case of Sarcoma developing under Calcareous Plate.—Mr. E. E. Henderson.

Twenty years previously the right eye had lost all useful vision as a result of a blow; there was no pain or discomfort of any kind.

The iris was tremulous, discolored, and adherent to the shrunken opaque lens, the tension was lowered, but the cornea was clear and there was no scar. On the upper and inner side of the globe a distinct nodule could be seen.

The eye was excised and the orbit exenterated. On section the eye showed the cornea clear, a small cataractous lens and the retina detached. There was calcareous degeneration of the choroid, and extending from the optic nerve to the equator was a flattened mass of new growth covered by a calcareous plate; a little behind the equator and sclerotic was perforated by the growth, most of which was extraocular. The tumor proved to be a spindle-celled melanotic sarcoma.

A new form of Scotometer.—Mr. P. C. Bardsley.

This instrument, which was exhibited, is adapted for taking the field of vision up to 30° from the fixation point. It consists of a concave disc, which can be revolved round its centre, and having small test objects 2 to 4 m.m. in diameter, white or colored, moving along a slot in the disc. The fixation point, a small white disc in the centre, is perforated so that the patient's eye can be controlled by the observer from behind. The movements of the disc and test object are all performed from behind, so that there is nothing to distract the patient's attention. It is provided with a suitable chin rest and other accessories.

A case of Buphthalmos apparently cured by the performance of Iridectomy.—Mr. S. Stephenson.

Lily W., aged 7 years and 9 months, was first seen at the North Eastern Hospital on October 24th, 1900, when the child was found to be the subject of bilateral buphthalmos which had existed

since birth. The family history showed nothing of importance, but as an infant the child gave distinct evidences of inherited syphilis. Fourteen days before coming under observation there was some mucopurulent discharge from both eyes; and on examining the cornea it was found to measure 14 m.m. transversely, the anterior chamber was deep, the tension was raised, and the optic disc cupped. Mercury was given internally and myotics locally until January 27th, 1901, when the condition was practically unchanged, and the tension was +1.5 to 2. An iridectomy was then performed on the right eye, followed some months later by one on the left; and from that time the tension became normal and has remained so ever since. The last examination, made on January 2nd, 1908, showed the same measurements of the cornea, and the vision was 6/36.

Essential Shrinking of the Conjunctiva of twelve months' duration.—Mr. Hosford.

M. D., male, came for treatment on October 29th, 1907, complaining only of slight itching and pain in the lower eyelids, with some small amount of discharge. The patient lost the sense of smell 8 years ago. The sub-epithelial tissues of both eyelids showed fibrous contraction with some vertical bands, and the fornices were obliterated. There were no evidences of bullæ either locally, nor in any part of the skin or mucous membranes.

Right Hemiplegia with Obstruction (? Thrombosis) of the Left Common Carotid and Central Artery of the Retina, with perception of Light in the Eye.—Dr. L. Guthrie and Mr. M. S. Mayou.

J. S., aged 7, was run over by a cab on July 17th, 1906, several ribs on the left side being fractured. On July 21st there was pneumothorax on the left side with rise of temperature. On July 23rd there appeared hemiplegia of the right side of the body and aphasia, and the sight of the left eye was lost. On November 3rd, 1907, there was still some paresis of the right side of the face, as well as of the arm and leg of the same side; the tendon reflexes were exaggerated and there was extensor plantar response. The facial paralysis was of the supranuclear type, and the tongue deviated to the right, while there was slight motor dysphagia and verbal amnesia.

Although pulsation could be distinctly felt in the suprasternal notch and over the right subclavian, there was no impulse over the line of the left common, external, or internal carotids, nor of the left facial or temporal arteries. There was a presystolic cardiac murmur. The right eye was normal in every respect, but the left was divergent, the pupil only acted consensually, and there was no perception of light. When first admitted there was some vision remaining on the temporal side of the field. Ophthalmoscopic examination showed the media clear, the disc atrophic with vessels much reduced in size. The retinal veins appeared thrombosed and had white lines along them, and on the side of the disc was a white area of old exudation extending out towards the macula, which was itself pigmented. The choroidal vessels showed no change.

The case suggests an extensive thrombosis involving the large vessels in the neck and leading to the occlusion of the middle cerebral artery and arteria centralis retinæ; but another suggestion, by Dr. Guthrie, is that the left carotids are congenitally absent, and that an embolism of the central artery of the retina has occurred in the usual way, while the escape of the ciliary vessels is also somewhat in favor of this view.

Sympathetic Ophthalmia.—Mr. C. Wray.

This case was exhibited a year ago, and since that time a further relapse occurred, which recovered in a short time under treatment with acetozone. Mr. Wray brought forward the case because the anterior chamber was shallow, the tension raised, and there was almost total posterior synechia; and he wished for an opinion as to the advisability of performing an iridectomy.

A case of Optic Neuritis.—Mr. Harvey Goldsmith.

A girl, aged 20, came under observation with history of having suddenly lost the sight of the left eye 6 weeks ago. The vision in the right was 6/6 and that of the left 6/60; refraction emetropic.

The right eye showed hazy media, blurring of the edge of the disc, both arteries and veins distended, the latter being in places constricted while in others their course was concealed by patches of exudation. There were no hæmorrhages and no gross vitreous opacities. The left eye showed much the same changes, and at the macula was a translucent, grey area about the size of the disc, over which the retinal vessels passed.

The media had become much more opaque since the last examination, 14 days ago, which made the above details rather difficult to determine.

PAPERS.

Carcinoma of the Orbit, originating in a Meibomian Gland.—Mr. Simeon Snell.

This was the case of a woman, aged 63, in whom a small tumor of the upper lid appeared 10 years ago. It was removed in 1904, removed again with a portion of the lid in 1905, but in 1906 it was found necessary to excise the globe and exenterate the orbit; in October, 1907, however, the orbit was filled with a large growth, and there was involvement of pre-auricular and cervical glands. It was a spheroidal-celled carcinoma.

Coloboma of the Iris in each eye, occurring in five generations.—Mr. Simeon Snell.

Mr. Snell showed a family tree in which 12 members (5 male and 7 female) out of a total of 41, extending over 5 generations, exhibited a coloboma of the iris. The defect was the same in all cases, viz., downwards and outwards, confined to the iris, the choroid not being affected, and situated quite peripherally so that the edge of the lens was visible. The patient, Mr. R. H. (senr.), who came under Mr. Snell's observation, and whose mother had been affected, had children by two husbands, and in both branches of the family there were found members who had the same deformity; and it is also remarkable that the only two affected members of the younger generation were females, and the subjects of complete aniridia.

Microphthalmos resembling Glioma with Lenticonus and Hypertrophy of the Ciliary Body.—Mr. M. S. Mayou.

T. B., aged 6 months, came to the Central London Ophthalmic Hospital on June 23rd, 1907, under Mr. Hancock, with the history that the left eye had been small from birth; there were no other deformities and no sign of syphilis.

Right eye normal, the left an obviously small eye with persistent pupillary membrane. Behind a clear lens was seen a yellowish-white reflex with vessels running in front of it, but there were no inflammatory signs.

The eye was enucleated, and on section the ciliary body and processes were normal, but behind them, lying on the pars plana, was a large mass, consisting of pigmented and unpigmented cells, evidently derived from the epithelial cells of the ciliary body, and showing in some places an attempt at an alveolar arrangement. The retina lay thickened and folded behind the lens, and consisted mostly of neuroglia tissue with no definite structure. There was a coloboma of the choroid below. The lens showed (posterior) lenticonus with distortion of the posterior fibres, the nucleus was situated centrally, and there was no posterior vascular capsule. The vitreous was merely represented by a few filaments directly behind the lens, and there was no trace of the hyaloid artery.

The interesting points about the case are, first, the clinical appearance of pseudoglioma in a microphthalmic eye not associated with persistent hyaloid; secondly, the lenticonus, and thirdly the hypertrophy of the ciliary body.

There was no evidence of inflammation, and Mr. Mayou regarded the case as one simply of arrested development.

Epithelial hypertrophy in association with microphthalmos is extremely rare, but has been described before by Bock, Mayou, and Lafon.

Optic Neuritis in Cerebral Tumors.—Mr. Leslie Paton.

Mr. Paton based his observations on records collected from 252 consecutive cases seen at the National Hospital, Queen's Square, in 148 of which the presence of tumor was verified by operation or autopsy.

Optic neuritis was present in 125 cases, 12 had only slight neuritis, while 27 were already in a condition of post-neuritic atrophy when first seen. In 38 cases optic neuritis was entirely absent, the large majority of these occurring in subcortical and pontine tumors; when, however, subcortical tumors did develop neuritis, it generally indicated that the growth had involved either the grey matter of the cortex or the grey matter of the base, and in the case of pontine tumors that the cerebellum had become implicated. In tumors of the cerebral cortex, Mr. Paton showed that the intensity of the neuritis seemed to vary inversely with the distance of the growth from the anterior pole of the middle fossa, while the nature of the growth appeared to have very little influence on the development of optic neuritis.

With regard to the differences in intensity of the optic neuritis as indicating the side on which the tumor was present, Mr. Paton's figures suggested that no reliance could be placed on this sign; for although the preponderance was somewhat in favor of the more severe neuritis being on the affected side, yet in some cases it was more marked on the opposite side. The macular changes often seen in intense cases of optic neuritis were in all probability due to an overflow of œdematous fluid from the swollen disc into the nerve fibre layer. The temporary attacks of blindness, often observed in these cases, were probably caused by a sudden rise of intra-ventricular pressure, which, by bulging the thin floor of the third ventricle, pressed directly on the chiasma; that the cause is not to be found in the eye itself was shown by the fact that this symptom has been noticed in cases where optic neuritis was absent.

Mr. Paton dissented from the opinions that the neuritis in these cases was due to descending inflammation, to pressure in the vaginal space, or to the influence of toxins; and was inclined to regard the so-called optic neuritis as simply a manifestation locally of a general œdema of the cerebral tissues due to irritation set up by the tumor.

MALCOLM L. HEPBURN.

Clinical evening, February 13th, 1908.

Vice-President, Mr. TREACHER COLLINS, in the chair.

Case of Detachment of the Retina, treated by operation.—Mr. Leslie Paton.

A man, aged 50, was hit on the right side of the face by a large squib 34 years ago; four years later the right eye was found to be defective. In July, 1906, he complained of mistiness before the left eye, most marked on the nasal side of the field. A year later the condition was much about the same, and he was admitted into Queen's Square Hospital. The vision of the right eye was then found to be counting fingers at 1 foot on the temporal side of the field, and of the left 3/60.

Ophthalmoscopic examination showed double detachment of the retina, that in the right involving the outer and lower part of the retina as far up as the optic disc, while in the left the temporal was the affected portion, and in the extreme periphery on the nasal

side could be seen some old choroiditis. Some weeks later the case was transferred to St. Mary's Hospital for operation, and the following was the method of procedure.

A vertical incision was made over the external rectus of the left eye, 5 mm. behind its insertion; when the muscle had been exposed and cleared, a strabismus hook was passed, and utilized to pull the eyeball forwards. On a level with the upper border of the muscle a longitudinal trough was burnt with the actual cautery through the sclera behind the equator, when some fluid escaped; a thin Graefe knife was then plunged through the retina, which presented in the opening; a similar puncture was made below, on a level with the lower border of the muscle. Three days later the field was restored, and on January 17th, 1908, it was still full and the vision 6/18.

Monocular Buphthalmos with Mal-development of Iris.—Mr. Hosford.

In this case the left eye was noticed to be enlarged when the patient was 6 months old, and when seen at the age of 5, the left cornea measured 14.5 mm. horizontally and 12 mm. vertically, the anterior chamber was deep, the disc atrophic and cupped, tension +2. V.= Counting fingers only. R. V. with correction 6/5.

In the affected eye the iris showed difference in pigmentation of its outer and inner part; that surrounding the pupillary margin was blackish-brown in color, and occupied almost half the width of the iris; the peripheral portion was of a bluish-grey color, clear in detail, with no atrophic appearance. The iris was slightly tremulous.

Mr. Sydney Stephenson considered this was a case of rather exaggerated ectopia uveæ, such as often occurred in old blind eyes.

Mr. Parsons pointed out that this case dated from birth, and was of the type commonly described as congenital ectopia of the uvea. It belonged to a well-recognized group, though of a different pathological order from those cited by Mr. Stephenson.

The Chairman remarked that ectopia uveæ was usually seen in old glaucomatous eyes, and was associated with atrophy of the iris, the anterior portion of the stroma dragging the pigment round. The fact that this case exhibited so small a pupil made it clearly of congenital origin.

Lantern Demonstration on Primary Facts of Color Perception.—By Dr. Edridge-Green.

In connection with this subject Mr. Marshall observed that the whole subject of color vision was extremely important, and that the recent report by a Committee of the Ophthalmological Society was necessarily incomplete, since they were unable to go beyond the question as to the efficiency or otherwise of Holmgren's test. He proposed "that a Committee should be appointed to investigate the whole question of color blindness, to examine cases, and draw up a report setting forth the best method of testing for color blindness."

This was seconded by Mr. Lang; but on the suggestion being made by Mr. Doyne to the effect that the work involved would be of almost too great a magnitude, Mr. Marshall subsequently modified it to include practically only the latter part, viz.: the investigation of the best method of testing for color blindness. This resolution was carried.

An Orbital Case for Diagnosis—Mr. J. F. Cunningham.

W. K., a girl of 15 was the second of a family of eight; the mother had had two miscarriages. In March, 1907, she had been ordered glasses; with these she saw 6/6 in the left eye, while she only had perception of light in the right. In June, 1907, she began to complain of neuralgic pains in the right eye, and in the right side of face and neck, the attacks lasting 2 or 3 days. Very marked prominence of the right eyeball had been noticed by the doctor, which he said was much more evident in October, 1907, than in January, 1908, when she was admitted to St. Thomas's Hospital under Mr. Fisher. There was now a certain amount of divergence. the right pupil was inactive to light, though it responded consensually; some dullness of sensation was present in the first and second divisions of the fifth nerve. Ophthalmoscopically the right disc was slightly paler than the left, but there was no neuritis. Abduction and elevation in this eye was not so good as in the left. There was loss of weight and appetite, and Calmette's reaction gave a doubtful result.

Fundus Changes, the result of Injury at Birth.—Mr. J. H. Fisher.

This patient, a female, was first seen when 4 years old, in 1903, and the note made at that time was that while the left eye appeared normal, the right was microphthalmic to a moderate de-

gree, had no perception of light, and "a limpet-shell-like mass of silvery blue connective tissue came forward into the vitreous from the side of the optic disc."

The case next came under observation on December 16th, 1907, when the same description would still apply to the condition of the right eye, with the addition that there were several narrow cicatricial bands radiating out from the base of the cone into the retina; there was hardly any tract of retinal vessels to be seen. The mother stated that she had had 10 pregnancies, none of which were completely normal, it being necessary to use instruments in every confinement; only 3 children had survived. This child was born with a large hæmatoma over the left frontal region, and damage resulted to the right eye and temple.

Mr. Fisher considered the ophthalmoscopic picture indicated serious injury to the optic nerve and vessels, and that hæmorrhage into the canal of Cloquet produced the ground work for the connective tissue formation.

A case of Microphthalmia—Mr. J. H. Fisher.

A male infant, aged 2 months. The left eye was normal except for the presence of a coloboma of the iris downward, associated with a similar defect in the choroid.

The right eye showed a shrunken upper lid, which was inverted on contraction of the orbicularis muscle. Both lids were well formed, and the lower one, which was not shrunken, was distended by by a cyst, the size of a small hazelnut. Deeply situated in the orbit was an undeveloped eyeball, the size of a small pea. The child exhibited no other deformities.

? Metastatic Neuro-Retinitis.—Mr. J. H. Parsons.

Mrs. F. M., aged 41, came to University College Hospital, on December 23rd, '1908. Four days previously she had noticed the left eye was misty on waking in the morning, and this had continued ever since. Her brother had been under the care of Mr. Godlee with tubercular arthritis, otherwise there was no family history of importance. She had had one child, now aged nine, no miscarriages, and no syphilitic history was obtained. The urine was found to be normal. R. V. 6/6, no H. M. L. V. Counting fingers at 1m. Ophthalmoscopic examination showed the left optic disc covered with a brilliant white exudate extending beyond the margin for a short distance, especially down

and in. There was 3D of swelling, the veins were much dilated, and the arteries, which could not well be traced on the disc, were embedded in the exudation. There were a few hæmorrhages near the papilla, especially one, oval in shape, down and in. There was œdema of retina round the disc, extending as far as the macula. When last seen, on January 8th, 1908, in addition to the other signs, there was a perfect star-shaped figure, similar to that seen in albuminuric retinitis, at the macula. Vision the same as before. On January 13th the patient could count fingers at 2½ meters, and the swelling of the disc had diminished; on February 11th the sight had improved to 3/60.

The Chairman suggested that it would be interesting if Mr. Parsons would kindly inform the Society of the subsequent progress of this case.

Case of Follicular Conjunctivitis showing the result of a special method of treatment: one eye treated, the other eye left untreated.—Mr. C. Wray.

The method Mr. Wray adopted was to forcibly crush out the follicles, and subsequently paint the lids with 10 per cent argyrol; 3 separate occasions being found sufficient to cause the disappearance of the follicules.

Retinitis Proliferans.—Mr. P. C. Bardsley.

H. H., aged 12, stated that the sight in the right eye had always been bad. There was no history of injury obtainable, and no difficulty was experienced at the birth of the child, and no instruments were used. At the upper part of the disc in the right eye is a large bundle of connective tissue stretching forwards into the vitreous on the temporal side, and the retina is detached; there are also a few strands to be seen on the nasal side.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.

It gives us great pleasure to announce to the members of the American Academy of Ophthalmology and Oto-Laryngology that Mr. J. B. Lawford, F.R.C.S., of London, England, will deliver an address at the next annual meeting, to be held at Cleveland, O., August 27, 28 and 29, 1908.

REVIEWS.

THE DEVELOPMENT OF OPHTHALMOLOGY IN AMERICA; 1800 TO 1870. By Alvin A. Hubbell, M.D., Ph.D. W. T. Keener & Co., 90 Wabash Ave., Chicago, 1908. Price, $1.75.

There is no doubt that every oculist must enjoy reading this valuable and excellent contribution to the history of ophthalmology in America as much as the reviewer has done, and every oculist should own it. It clearly sets forth what the men working in our special line have done to help in advancing knowledge and what practical suggestions they have made. The book is the more interesting as it is richly illustrated with portraits of the most prominent workers in ophthalmology in America during the period which its text embraces. We hope the gifted author will continue his researches and soon give us a further volume completing the history of the century. ALT.

A STUDY OF THE OCULAR MANIFESTATIONS OF SYSTEMIC GONORRHŒA, WITH REPORTS OF CASES OF THIS NATURE. By W. G. M. Byers, M.D. (Studies from the Royal Victoria Hospital, Montreal, Canada. Vol. 2, No. 2.)

This is not only an excellent report on the previous literature concerning ocular metastasis in general gonorrhoic infection, but the author has enriched it by some well observed cases of his own. In sifting the literature he has shown by careful study of the reported cases that many of them cannot be accepted as such. Still a sufficient number of well authenticated cases remains by which it is shown that metastatic affection of the eye in general gonorrhoismus are a well established fact.

The author's work is highly to be recommended.

ALT.

PAMPHLETS.

Report of the Committee of Oculists and Electricians on the Artificial Lighting and Color Schemes of School Buildings. Drs. Standish, Proctor & Derby.

Coloboma of the Choroid Upward. Opaque Nerve Fibres. G. S. Derby.

Ligation of the Common Carotid Artery for Malignant Recurring Hæmorrhage of the Vitreous. G. S. Derby.

Roentgen Ray in Epithelioma. W. A. Pusey.

The Use of Carbon Dioxid Snow in the Treatment of Nævi and other Lesions of the Skin. W. A. Pusey.

Eine neue Behandlung der blennorrhœa neonatorum et adultormum mittelst Bleno-Lenicetsalbe. Dr. Adam. (A new treatment of blennorrhœa with bleno-lenicet ointment.)

Ambrose Paré. S. C. Ayres.

Infantile Gangrene of the Cornea (4 cases) in which the Trepanoma Pallidum was found. S. Stephenson.

A New Instrument for Partial Tenotomies. G. G. Lewis.

Symposium on Headache. S. D. Risley, E. E. Mayer, J. C. Wilson and B. A. Randall.

Concerning the Vascular Changes in the Uveal Tract, Retina and Optic Nerve in Quinine Blindness and in Tobacco—Alkohol Amblyopia and the Lesions Found in the Eyes of a Man who Died from the Effects of Drinking Methyl Alkohol. G. E. De Schweinitz.

Extensive Disease of the Retinal Vessels Followed by Proliferating Retinitis in a Young Colored Man. G. E. de Schweinitz.

Acute Rise of Intraocular Tension Following a Single Subconjunctival Injection of Cyanid of Mercury. G. E. de Schweinitz.

Concerning Pulsating Exophthalmos. G. E. de Schwenitz and T. B. Holloway.

Choroidal Diseases, their Relation to General Diseases and Particularly to Infections, Intoxications and Auto-intoxications. G. E. de Schweinitz.

The Eye and the Kidney. G. E. de Schweinitz.

The Pupil of the Eye in Health and Disease. G. G. Lewis.

An Open Cleft in the Embryonic Eye of a Chick of 8 days. O. Landmann.

Amnion Protrusion into the Lens Vesicle. O. Landmann.

82d Annual Report of the Massachusetts Charitable Eye and Ear Infirmary. 1907.

Clinical Notes from the David Prince Sanitarium.

The Eyes and Eyesight of Birds with Especial Reference to the Appearances of the Fundus Oculi. C. A. Wood.

Ætiology of Erysipelas. C. R. Holmes.

Diagnosis and Treatment of Diseases of the Tear Passages. M. Ramsay.

A New Pathogenic Micro-organism in the Conjunctival Sac. H. McKee.

Lewis.

Ophthalmia Neonatorum, a Pathogenic Anachronism. F. P.

The Duality of Man. E. G. Savage.

The Conjunctival Tuberculin Reaction in the Diagnosis of Eye Diseases. W. O. Nance and G. W. Swift.

Interstitial Keratitis from a Modern Standpoint. S. Stephenson.

A Method of Extracting the Thickened and Opaque Capsule Sometimes Left After the Absorption of Traumatic or After Extraction of Other Complicated Cataracts in which the Pupil is Usually Dilated and Displaced, and a Dense White Membrane fills the Pupillary Area. D. W. Greene.

A Clinical Study of 500 cases of Conjunctivitis. H. McKee.

Anisometropia. W. E. Bruner.

Foreign Bodies in the Anterior Segment of the Eye and their Removal. W. E. Bruner.

Some Cases of Injury to the Eye by Steel. W. E. Bruner.

Observations on the Motais Operation for Ptosis. Report of 3 cases. W. T. Shoemaker.

Results of Dr. Allport's Plan of Examination of the Eyes and Ears of Public School Children. L. Emerson.

Angeborene Anomalie der Scleroconjunctiva und Cornea. (Congenital anomaly of the scleroconjunctiva and cornea.) F. Falchi.

Methode der Blepharoplastik bei centralem Colobom des Augenlides. (Method of blepharoplastic operation for central coloboma of the eyelid.) F. Falchi.

Sur le dévelopment de la glande lacrymale. (On the development of the lacrimal gland.) F. Falchi.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. Shoemaker, M.D.,

St. Louis, Mo.

THE RELATION OF HEADACHE TO AFFECTIONS OF THE EYE.

Samuel D. Risley (*Penn. Med. Jour.*, Dec., 1907,) believes the following conclusions are forcibly demonstrated by experience:

1. That ocular disease or anomalies of the ocular apparatus are in a large group of patients the sole and sufficient cause of headache.

2. That abnormal visual conditions may be the unsuspected cause; therefore, that the absence of symptoms obviously referable to the eyes, does not exclude them as an ætiologic factor in headache.

3. That, notwithstanding the congenital origin of many ocular anomalies, the sudden onset of headache, coming on during or after middle life, or after attacks of acute disease, or during the ravages of some general dyscrasia, does not exclude the eye as an ætiologic factor.

4. That the participation of the eyes as a probable cause of headache and a considerable group of associated symptoms can be positively excluded only in the proved absence of ocular disease, or after the most painstaking correction of any existing error of refraction or abnormality of binocular balance.

5. That, in many cases, prolonged eye-strain sets up pathologic states in the fundus oculi which require, like other inflamed tissues, time for recovery after removal of the cause; therefore *immediate* relief of symptoms is not always to be expected.

6. That the existence of some general affection, e. g., gout, rheumatism, syphilis or diabetes in any of their protean manifestations or results, does not exclude the eyes as the immediate cause of an associated headache since the accompanying ocular disease, e. g., iritis, choroiditis, glaucoma, etc., may be the direct cause of the pain in the head, to relieve which, local treatment also will be required.

7. That the existence of congenital ocular defects is especially prone to be the occasion of headache and other reflex neuroses in individuals with impaired vitality, whether inherited, or acquired by faulty living or by daily toil in a bad hygienic environment.

While these conclusions seem justified, he believes that, in many patients with ocular defects who suffer from headache, there may be no relation between the condition of the eyes and

the headache. This seems substantiated by the fact that many patients continue to suffer from the headache after most careful correction of their errors of refraction, with marked relief of eye symptoms, and also that some patients may have certain kinds of pain in the head relieved while others persist. Further, many persons who have greatly impaired vision and suffer with inflamed and sensitive eyes never have headache or other reflex nervous symptoms. It is evident, therefore, that something more than the eyes must be taken into consideration in seeking for the cause of headache, the patient's temperament and individual peculiarities being an important factor.

Concerning the location of the pain Risley says: "Vertex pain is comparatively rarely due to the eyes. In optic-nerve disease, as in retro-bulbar neuritis and atrophy, there is, in many cases, pain in front of the head, on top, but it is not a vertex pain. The pain when associated with eye affections occurs in the brow, occiput, back of the eyes, as a hemicrania, or in the temples, and in point of frequency in the order named.

"Simple eye-strain, due to error of refraction, particularly in children, will usually give rise to brow-pain. If associated with some abnormality of ocular balance, as insufficiency of the interni, esophoria, or hyperphoria, there will usually be occipital pain also. If there is at the same time marked turgidity or inflammation of the choroid with retinal irritation or macular disease of the retina and choroid, there will be a tense post-ocular pain which shoots to the occiput, nape of neck, even down the spine or radiating to the shoulders."

He explains the advancing symptoms of "sick or nervous headaches," culminating in a crisis, by the fact of the steadily increasing congestion of the uveal tract resulting from use of the eyes or exposure to light. This congestion is relieved by confinement in a dark room, by emesis, catharsis or by other means taken to relieve the pain. Those who think their headaches are hereditary may be correct, in that they have inherited the peculiarly shaped orbits which produce hypermetropia, astigmatism and muscular imbalance frequently.

Headaches due to eye-strain often develop after some acute illness which lowers the vitality and also in persons between the ages of forty and fifty when the accommodative power is insufficient. Finally, many patients' headaches are the result of unhygienic surroundings and the lives they are compelled to lead. While correcting even small errors of refraction in those cases may give much relief, the only cure is to change their manner of living.